

Remarks

Claim 1 has been amended to include the limitations in claims 2, 5, 6, and 7. In addition, claim 1 recites that at least one of the pass filters is a high pass filter or a low pass filter. Support is found in claims 3 and 4. Similarly, claim 10 has been amended to include the limitations of claims 11, 14, and 16 and that at least one of the pass filters is a high pass filter or a low pass filter. Claim 15 has been amended to recite that for the claimed method, the first and second optical splitters are optical high pass filters. Independent claims 1 and 10 detects at a desired wavelength which indicates the presence of water. Support for this limitation is found, for example, in paragraph 0019 of the published application.

New claim 22 recited that, for the claimed method, the first and second optical splitters are low pass filters. New claims 19 and 20 recite that, for the claimed device, the first and second optical splitters are high or low pass filters, respectively. (Claims 3 and 4 recite that at least one of the filters is a high or low pass filter, respectively.) Support for new claims 19 and 21 is found, for example, in paragraph 0019 of the specification.

The drawings were also objected to on the basis that the reference character "208" was used to designate both a detector and an optical splitter. Figure 2 has been amended as shown in the replacement sheet so that the detector has reference character "207" and the specification has been so corrected. In addition, paragraph 0003 of the specification has been amended so that "D2" has been changed to "D1." Finally, claims 6, 14, 16, and 17 were objected to on various formalities. These claims have been amended in view of the Examiner's remarks.

The above Amendments and these Remarks are in reply to the Office Action mailed April 26, 2005. Reconsideration of the rejections is requested.

Claims 1, 2, 5-11, and 14-18 were rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 6,608,682 to Ortyn.

The Examiner stated that claim 1 described a wavelength measurement device comprising multiple optical detectors, each adapted to detect light at a different wavelength, and a sequence of optical wavelength splitters each adapted to preferentially provide light to one of the detectors at the desired detected wavelength of the detector. The Examiner asserted that Ortyn, in column 4, lines 41-45, is said to describe "a plurality of light reflecting elements ... reflecting [light] having a predefined characteristic, while enabling light that does not have the predefined characteristic to pass", and in lines 52-54 of the same column, is said to add "for each light reflecting element there is a detector disposed to receive reflected light". The Examiner further asserts that the plurality of optical wavelength splitters are disclosed by the selective light reflecting elements of Ortyn, allegedly only allow light with certain characteristics to pass, reflecting all others. These elements are said to be shown as being arranged in sequence in Figure 25 of Ortyn. Finally, the multiple detectors are said to be disclosed as the "detector[s] disposed to receive reflected light" in Ortyn. The Examiner concluded that all the elements of claim 1 were disclosed by Ortyn.

With respect to claim 2, the Examiner asserts that in column 5, lines 32-34, Ortyn is said to provide that "each light reflecting element is a dichroic filter, or dichroic mirror, which are arranged to reflect light within predefined bandwidths". The Examiner concluded that the dichroic filters and mirrors employed by Ortyn selectively reflect light in a specified bandwidth, and therefore function as pass filters.

With respect to claim 7, the Examiner asserts that in column 15, line 31-32, Ortyn states that the object of interest to be analyzed may be paper. Therefore, the Examiner concludes that

Ortyn has discloses using his device to determine characteristics of paper.

The Examiner also noted that Ortyn disclosed the elements recited in method claims 5, 6, 8 and 9. Regarding device claims 10, 11 and 14-18, the Examiner noted that they speak to the method of using the device specified in claims 1, 2, and 5-9. The Examiner reasoned that because the method follows from the description of the device, the device is not patentably distinct, therefore, claims 10, 11, and 14-18 are rejected on the same basis as claims 1, 2, and 5-9.

Applicants submit that even assuming arguendo that the reference teaches the art as suggested by the Examiner, the rejections are traversed in light of the amendments to independent claims 1 and 10 as discussed above. In particular, the independent claims, among other things, have been amended to include the recitation that at least one of the pass filters is a high pass filter or a low pass filter.

Claims 1-6, 8-15, 17, and 18 were rejected as being anticipated by U.S. Patent 5,995,235 to Sui et al. Specifically, the Examiner referred to column 5 lines 43-52, which described:

... a cascade system 500 using a linear arrangement of band pass detectors 512_n (n=1,2,3...N) coupled to a light filter/distributor 504. The system 500 contains an optical signal filter/distributor 504, coupled to a plurality of bandpass filter elements 508_n and detectors 510_n. The optical signal filter/distributor 504 comprises a plurality of low pass or high pass filter elements 506_n aligned in a collinear arrangement such that the incident beam from the collimating optics 502 is focused upon the first filter element 506₁. The first filter element 506₁ reflects a portion of the spectrum towards the first band pass photon detector 512₁, filter element 508₁ and detector 510₁. The remaining spectrum is passed through the filter element 506₁ to filter element 506₂ wherein another portion of the spectrum is reflected towards a second bandpass photon detector 512₂. This process continues until the final filter element 506₄ reflects the remaining spectrum towards the last bandpass photon detector 512₄.

The Examiner noted that "linear arrangement of bandpass detectors" specified in Sui met the limitation of multiple optical detectors each adapted to detect light at a different wavelength of claim 1. Further the Examiner asserted that the "optical signal filter/distributor coupled to a

plurality of bandpass filter elements" where the filter elements "comprise a plurality of low pass or high pass filter elements" of Sui met the limitation of the sequence of optical wavelength splitters of claim 1 and met the limitations of the optical splitters consisting of pass filters, high pass filters, or low pass filters in claims 2-4. Moreover, the Examiner asserted that the description of how the light is provided to each detector in Sui, met the limitations of claims 5,6, and 8 by preferentially providing light to each detector using a pass filter, and reflecting the light to the optical splitter.

Finally, the Examiner stated that in column 2 line 38, Sui allows that light can be transmitted through a filter to be measured by a detector, which thereby met the limitation of claim 9 that light is preferentially transmitted to a detector.

With respect to device claims 10-15, 17, and 18, the Examiner noted that they speak to the method of using the device specified in claims 1-6, 8, and 9 and concluded that the method follows from the description of the device and therefore was not patentably distinct. Hence claims 10-15, 17, and 18 were rejected on the same basis as claims 1-6, 8, and 9.

Applicants submit that even assuming arguendo that the reference teaches the art as suggested by the Examiner, the rejection is traversed in light of the amendments to independent claims 1 and 10 as discussed above. In particular, the independent claims, among other things, have been amended to include the recitation that the claimed invention is directed to determine the characteristics of paper which was set forth in canceled claims 7 and 16.

Claims 3, 4, 12, and 13 were rejected under 35 U.S.C. 103(a) as being unpatentable over Ortyn in view of Sui. The Examiner stated that these claims specified that the pass filters of claims 2 and 11 were either high pass or low pass filters. Ortyn was said to disclose dichroic filters which acted as pass filters, selectively allowing specific wavelengths of light to pass, but

the Examiner conceded that the reference did not specify that the filters are either high pass or low pass filters. However, the Examiner asserted that in describing an embodiment similar to the one disclosed in Ortyn, Sui, in column 5 lines 64-65, was said to teach that "the filter elements are low pass or high pass filters".

The Examiner concluded that it would have been obvious to one of ordinary skill in the art at the time of the invention to use high pass or low pass filters to function in the same manner as the dichroic filters disclosed by Ortyn. The Examiner reasoned that high pass or low pass filters would allow a broader range of wavelengths of light to pass through, thereby sending more light to the detector to increase the detected signal, and improving the sensitivity of the device.

Independent claims 1 and 10 have been amended to include, among other things, the limitation that device and method are directed to measuring the characteristics of paper which limitation was found in canceled claims 7 and 16. Applicants submit that this basis of rejection is moot; moreover, they submit that a person of ordinary skill would not be motivated to combine the teachings of the two references with respect to the claimed invention for the reasons set forth below.

Finally, claims 7 and 16 were rejected under 35 U.S.C. 103(a) as being unpatentable over Sui in view of Ortyn. The Examiner reasoned that Sui disclosed all the elements of the present invention except using the device to analyze the characteristics of paper. Ortyn is said to disclose a similar device and specified that it could be used to analyze paper (column 15, lines 31-32). The Examiner concluded that it would have been obvious to one of ordinary skill in the art at the time of the invention to use the device disclosed by Sui in the analysis of paper because paper can be imaged using reflected incident light.

The limitations of claims 7 and 16 have been incorporated into the independent claims.

Applicants submit that a person of ordinary skill would not be motivated to combine that teachings of Ortyn and Sui because the references describe devices that measure different characteristics. Ortyn discloses a method of creating images of objects such as cells and particles. The imaging system is used to determine morphological, photometric, and spectral characteristics. (See col. 8 line 66 to col. 9 line 34.) The object being imaged can also include semiconductor wafer, paper, and other objects from which light is reflected. (Col. 15 lines 25-33.) While Ortyn does mention parenthetically that the imaging system can be used to image paper, there is no suggestion of measuring for the presence of water in the paper. Indeed, the images of objects refer to external properties such as an object's contour, e.g., cell morphology. There is no teaching or suggestion in Ortyn of measuring the composition of an object. In particular, there is no teaching or suggestion of measuring the presence of water in the paper.

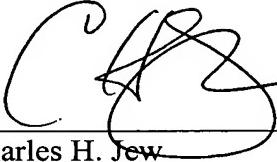
In contrast, Sui discloses a system of bandpass photon detectors for monitoring optical emission characteristics of a plasma within a reaction chamber. In one embodiment, a plurality of such detectors can be cascaded to detect multiple bands of wavelengths. (Col. 1 line 52 to col. 2 line 13.) The detector is particularly suited for use in optical emission spectroscopy (OES) systems used to monitor and characterize a plasma within a plasma enhanced semiconductor wafer processing system. (Col. 2 lines 49-61.) As is apparent, the Sui detector is not directed to creating images of objects, therefore, a person of ordinary skill would not be motivated to combine the teaching. Moreover, Sui does not cure the deficiencies of Ortyn since Sui does not teach or suggest measuring for the presence of water.

In view of the above, it is respectfully requested that the Amendments set forth above be entered.

The Commissioner is hereby authorized to charge any deficiencies or credit overpayment
to Deposit Account No. 01-1125.

Respectfully submitted,

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